

Coreq Support for Section 1.6a

Topic 1: Methods of Factoring

(Videos: Greatest Common Factor and Factoring by Grouping; Factoring Trinomials of the Form $x^2 + bx + c$; Factoring Trinomials of the Form $ax^2 + bx + c$; Factoring Binomials)

Recall that in previous sections we used several methods of factoring.

- Factoring a greatest common factor
- Factoring by grouping
- Difference of perfect squares
- Factoring trinomials

Topic 2: Solving Quadratic Equations by Factoring and the Zero Product Property

Recall from section 1.4 that some quadratic equations can be solved by factoring and by using the zero-product property.

The Zero Product Property: If $AB = 0$, then $A = 0$ or $B = 0$ or both.

Topic 3: Solving Quadratic Equations By Using the Square Root Property

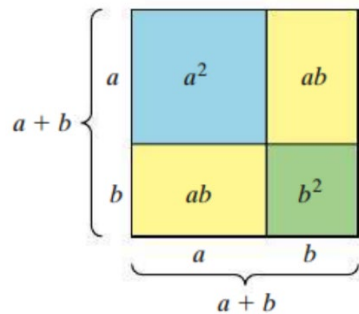
In section 1.4, we also solved quadratic equations by using the square root property.

The Square Root Property: The solution to the quadratic equation $x^2 - c = 0$, or equivalently $x^2 = c$, is $x = \pm\sqrt{c}$.

Topic 4: Squaring Binomials

(Video: Special Products 0:00 – 8:20)

Squaring a binomial can be visualized geometrically as the area of a square with side length $(a + b)$ where a and b are both positive, real numbers.



$$\text{Area} = (a + b)^2 = (a + b)(a + b) = a^2 + 2ab + b^2$$

This leads to two identities that can be used to square a binomial.

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

Topic 5: Multiplying the Sum and Difference of Two Terms
(Video: Special Products 8:21 – 13:18)

Another special product is the product of the sum and difference of the same two terms. For products such as this, the linear terms cancel out, leaving the **difference of squares**. This can be generalized as the following identity.

$$(a + b)(a - b) = a^2 - b^2$$